



**Technical Memorandum  
Technical Review Comments on the  
Draft Baseline Human Health Risk Assessment  
Gulfco Marine Maintenance Superfund Site  
Freeport, Brazoria County, Texas  
EPA Identification No. TXD055144539**

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*Prepared for*

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## **1.0 INTRODUCTION**

This Technical Memorandum summarizes EA Engineering, Science, and Technology, Inc.'s (EA) technical review comments for the Draft Baseline Human Health Risk Assessment (BHHRA) prepared by the potentially responsible party (PRP)'s primary consultant, Pastor, Behling & Wheeler, LLC (PBW), for the Gulfco Marine Maintenance Superfund Site (site), located in Freeport, Texas; and submitted to the U.S. Environmental Protection Agency (EPA) on 31 August 2009. The technical review was conducted to ensure that the Draft BHHRA complies with guidance, determine if calculations have been performed correctly, and establish whether appropriate conclusions had been reached. For this review, source material used for modeling (e.g., toxicity values, exposure parameters, etc.) were examined to assure that the appropriate values were incorporated, verify calculations, and confirm consistency in the values that were carried from the appendices into the main text tables.

General technical review comments pertaining to the Draft BHHRA are provided in Section 2.0. Specific technical review comments associated with the body of the Draft BHHRA, including the tables and figures, are provided in Section 3.0. Section 4.0 provides a summary based on EA's technical review.

## **2.0 GENERAL TECHNICAL REVIEW COMMENTS**

### **General Comment 1.**

An Executive Summary and List of Acronyms are recommended for the document.

### **General Comment 2.**

EPA screening values used in the Draft BHHRA are greater than one year old. Several chemical toxicity screening values have been updated by EPA that are not reflected in this outdated table. The new recommended EPA Region 6 screening values are the Federal Regional Screening Levels (RSLs) (EPA 2009a). RSLs should be used in the screening analysis.

### **General Comment 3.**

Screening of chemical concentrations against their corresponding background values was performed in the Draft BHHRA. Chemicals detected at the site and deemed less than their corresponding site background concentration were not evaluated further in the Draft BHHRA. Background screening is a source of significant uncertainty in a risk assessment. Background screening should not be conducted and chemicals should not be eliminated without further analysis in the risk assessment. EPA guidance recommends that a comparison to background, such as an evaluation of potential background risk, be included in the uncertainty section.

**General Comment 4.**

The Texas Commission on Environmental Quality (TCEQ) Protection Concentration Levels (PCLs) were used for screening purposes. However, the March 2006 PCLs were used instead of the more appropriate March 2009 values. These PCLs and the references in the text should be updated.

**General Comment 5.**

Each medium was evaluated separately in the Draft BHHRA. Total risks for each receptor were not summed across media; thus, characterization of potential risk is not complete. Risk across media should be performed (EPA 1989, 2002) to allow the assessment of potential risks for each receptor of concern.

**General Comment 6.**

Surface water was eliminated as a media of concern based on March 2006 TCEQ PCL screening values. Surface water should be re-evaluated as a media of concern using the more appropriate March 2009 PCL screening values.

**General Comment 7.**

The data used in the Draft BHHRA were not included in the report. As such, some calculations could not be verified. The data should be included in the Draft BHHRA.

Also, based on an evaluation of the screening table for surface water, it appears that only acrylonitrile and metals were detected in surface water. Because the data used in the Draft BHHRA were not included, it is unclear if a limited set of analyses were evaluated for surface water samples. The rationale for limiting analyses (if this was the case) should be included in the text of the Draft BHHRA.

**General Comment 8.**

Information in the tables of the report was difficult to locate at times based on table format. Table formats should be revised to follow the EPA-recommended table format (EPA 2002).

### **3.0 SPECIFIC TECHNICAL REVIEW COMMENTS**

The following technical review comments (Specific Comments 1 through 7) are associated with the body of the Draft BHHRA, including the tables and figures.

**1. Section 2.0, Pages 6 and 7**

This section discusses the sampling and analyses of data for the Draft BHHRA. It is unclear why certain analyses were performed for some media. The rationale for not conducting a full suite of analyses for each medium should be included. For example in surface water, only inorganics were analyzed. Rationale for not including other analyses should be discussed.

**2. Section 2.2.2, Page 12 and Appendix B**

The background analysis was performed based on the calculation of 95-percent upper confidence limits (UCL) on the mean using the ProUCL program. The current version of ProUCL calls for the indication of non-detects in the input file and does not include these samples as detects in the calculations (EPA 2009b). The latest version of ProUCL should be used and the non-detects should be treated appropriately.

**3. Section 3.1.2, Page 157**

Based on a PBW finding (May 2009) that ground water at the site does not discharge to surface water, the potential for contaminants in ground water to migrate to surface water was not considered. Any references in the Draft BHHRA to May 2009 report conclusions should be considered pending until the May 2009 report is approved by EPA.

**4. Section 3.1.4, Page 17**

A risk assessment that was performed for fish ingestion concluded that recreational fishing does not pose a threat due to exposure to the site; this risk assessment was accepted by EPA. The Draft BHHRA extends this assumption to shellfish ingestion. Although the exposure scenarios are comparable, the uptake and bioaccumulation by shellfish is not the same as in fish. The uncertainties with the lack of quantitative analysis of shellfish should be discussed in the uncertainty section. Although a ban is in existence, it is not based on chemical concentrations in shellfish; therefore, it is important to properly assess shellfish concentrations and their potential risks to humans.

**5. Sections 5.3 and 5.4, Page 32**

A full risk characterization calculation was not performed for the contact recreational and off-site residential scenarios. Instead, a ratio comparison to their respective PCLs was performed. Without calculating an actual potential risk, it is not possible to assess total risk for these receptors across media. Risk characterization calculations should be performed for all potentially complete pathways.

## **6. Section 6.0**

Several assumptions made in the Draft BHHRA should be discussed as to their associated uncertainty. The lack of risk analysis for shellfish and the assumption that ground water does not discharge to surface water should be discussed. Additional discussion should also be added regarding the limited chemical set for which analyses were run for several media.

## **7. Section 7.0**

The conclusions section should be able to discuss each potential receptor and indicate if there is a concern for their exposure to the site. This cannot be performed until risks are summed for each receptor across media in order to assess a total potential risk for all exposure pathways.

## **4.0 SUMMARY**

In summary:

1. Contaminants should not be screened out using background concentrations; background comparisons should be addressed in the uncertainty section. Contaminants deemed to be at or below background concentrations can also be summarized in the conclusions of the document.
2. Several parameters used in the Draft BHHRA are outdated and should be updated as noted in the General and Specific Comments.
3. Table formats should be updated to reflect recommended EPA formats (EPA 2002).

Correction of these issues is unlikely to change the Draft BHHRA conclusion that human health risks at the site are acceptable, based on the deed restrictions placed on the property. However, resolving these issues will place the conclusion in the appropriate regulatory context.

## REFERENCES

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